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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/562,505	12/22/2005	Ichihiko Takahashi	188-101	7936

7590 06/01/2007

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EXAMINER	
AHMED, SHEEBA	

ART UNIT	PAPER NUMBER
1773	

MAIL DATE	DELIVERY MODE
06/01/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/562,505	TAKAHASHI ET AL.	
	Examiner	Art Unit	
	Sheeba Ahmed	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-21 and 23* is/are rejected.

7)☒ Claim(s) *2,22,24 and 25* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 19, 2007 has been entered.

Response to Amendments

2. Amendments to claims 21, 23, 24, and 25 have been amended in the above-identified application. **Claims 1-25 are pending**.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 4, 5, 9, 10, 12, 14, and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Bilder et al. (US 5,534,289).

Bilder et al. disclose a method for aiding in the early detection of cracks in a structure wherein the method provides a self-activating crack indication system visible

to observers with minimal training and provides a non-destructive crack indication technique (Column 2, liens 27-34). The method utilizes microencapsulation using the envelopment of small solid particles, liquid droplets or glass bubbles within a coating (Column 2, lines 38-45). The method comprises applying a coating of a first color on the surface of the structure, said coating including microcapsules containing a second color and said microcapsules being subject to breakage upon occurrence of a crack in said structure and applying a second coating of a second color (Column 3, lines 1-15). He detailed description shows that the microcapsules comprises an oil soluble dye which are preferred because theses do not degrade the paint (Column 3, lines 45-60). Bilder provides a means for simultaneously implementing a crack-detection means, along with the application of a protective coating of paint to a structure. All limitations of claims 1, 4, 5, 9, 10, 12, and 14 are disclosed in the above reference.

4. Claims 1, 4-6, 9, 10, 12, 14-16, 18, 20 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Crites et al. (US 3,803,485).

Crites et al. disclose a method of detecting cracks wherein the method consists of applying a coating with entrapped reservoirs or chambers to which cracks will naturally propagate. The reservoirs are filled with an electrically conductive liquid which fills the cracks by capillary action that provides an electric current path this changing the electrical characteristics of the coating and allowing one to monitor the cracking and noting the changes in electrical characteristics of the coating (column 2, lines 6-34). When a fracture appears on the surface of a metal base, it propagates inwardly

into the base metal and outwardly towards the coatings. The capsules lying in the path of the crack rupture and fill the crack with the electrically conductive liquid thus providing a current path between the base and the coating. The result is that the electrical resistance of the coating drops and is reflected in the reading of an ohmmeter thus allowing detection of the crack (Column 3, lines 10-60). The coatings must possess the mechanical characteristics of greater fatigue crack resistance than the base at least under the conditions to which the base is exposed. Many plastic or resinous coating, paints, lacquer, etc., possess greater fatigue resistance than the metal structural members to which the present method is applicable. However, many inorganic coatings such as ceramic and phosphate base coatings may also possess the requisite fatigue crack resistance. Further, such nonorganic materials generally possess the electrical resistance properties for employing the preferred embodiments of the present invention wherein the change in electrical characteristics of the coating is monitored. The outermost coating may consist of metal foil or metal sheet; however, electrically conductive paints or lacquers which may be painted or sprayed onto the surface of the first coating are most convenient and economical.
Such coatings are well-known and usually consist of a resin or polymer carrier containing a dispersion of an electrically conductive particulate material. All limitations of claim 1, 4-6, 9, 10, 12, 14-16, 18, and 20 are disclosed in the above reference.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 3-5, 7-14, and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bilder et al. (US 5,534,289) in view of Otsuka (US 4,624,709).

Bilder et al. disclose a method for aiding in the early detection, of cracks in a structure wherein the method provides a self-activating crack indication system visible to observers with minimal training and provides a non-destructive crack indication technique (Column 2, liens 27-34). The method utilizes microencapsulation using the envelopment of small solid particles, liquid droplets or glass bubbles within a coating (Column 2, lines 38-45). The method comprises applying a coating of a fist color on the surface of the structure, said coating including microcapsules containing a second color and said microcapsules being subject to breakage upon occurrence of a crack in said structure and applying a second coating of a second color (Column 3, lines 1-15). He detailed description shows that the microcapsules comprises an oil soluble dye which are preferred because theses do not degrade the paint (Column 3, lines 45-60).

Bilder do not teach that the microcapsules contain nigrosine as the dye.

However, Otsuka discloses nigrosine dyes having a high compatibility with organic resins and solvents and that can be used as a charge control agent due to its electrostatic characteristics. The nigrosine dyes can be used as providing high concentration dyeing solutions and providing pigment compositions (Column 2, lines 28-37).

Accordingly, it would have been obvious to use nigrosine as the dye in the microcapsules and to optimize the amount of dye used in the microcapsules given that the higher the concentration of the dye in the microcapsule the better the detection of the crack.

6. Claims 1 and 3-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crites et al. (US 3,803,485) in view of Otsuka (US 4,624,709).

Crites et al. disclose a method of detecting cracks wherein the method consists of applying a coating with entrapped reservoirs or chambers to which cracks will naturally propagate. The reservoirs are filled with an electrically conductive liquid which fills the cracks by capillary action that provides an electric current path this changing the electrical characteristics of the coating and allowing one to monitor the cracking and noting the changes in electrical characteristics of the coating (column 2, lines 6-34). When a fracture appears on the surface of a metal base, it propagates inwardly into the base metal and outwardly towards the coatings. The capsules lying in the path of the crack rupture and fill the crack with the electrically conductive liquid thus providing a current path between the base and the coating. The result is that the electrical

resistance of the coating drops and is reflected in the reading of an ohmmeter thus allowing detection of the crack (Column 3, lines 10-60).

Crites do not teach that the microcapsules contain nigrosine as the dye.

However, Otsuka discloses nigrosine dyes having a high compatibility with organic resins and solvents and that can be used as a charge control agent due to its electrostatic characteristics. The nigrosine dyes can be used as providing high concentration dyeing solutions and providing pigment compositions (Column 2, lines 28-37).

Accordingly, it would have been obvious to use nigrosine as the dye in the microcapsules and to optimize the amount of dye used in the microcapsules given that the higher the concentration of the dye in the microcapsule the better the detection of the crack.

Allowable Subject Matter

7. Claims 2, 22, 24, and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

8. Applicant's arguments filed on March 19, 2007 have been fully considered but they are not persuasive. Applicants traverse the rejection under 35 U.S.C. 102(b) as being anticipated by Bilder et al. (US 5,534,289) and the rejection under 35

U.S.C. 102(b) as being anticipated by Crites et al. (US 3,803,485) and submit that Bilder and Crites fail to teach a second coating layer ***disposed underneath*** said first coating layer that is transparent and flexible enough so that cracks are prevented from forming in the second coating layer even upon cracking in the first coating layer.

However, the Examiner disagrees. First, the Examiner would like to point out that the second coating layer must be ***disposed on top*** of the first coating layer and not underneath in order to prevent cracks from forming in the second layer when cracks are formed in the first coating layer. Second, as pointed out above in Paragraphs No. 3 and 4, both Bilder and Crites teach a flexible outer layer. Specifically, Bilder provides a means for simultaneously implementing a crack-detection means, along with the application of a protective coating of paint to a structure and Crites teaches that their coatings must possess the mechanical characteristics of greater fatigue crack resistance than the base at least under the conditions to which the base is exposed.

Hence, the above rejections are maintained.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheeba Ahmed whose telephone number is (571)272-1504. The examiner can normally be reached on Monday-Friday from 6am to 2pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571)272-1284. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sheeba Ahmed/
Sheeba Ahmed
Art Unit 1773
May 26, 2007